

Students Attitudes Towards Choosing Information Technology and Computer Science Courses In Relation To Gender

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Abstract:The article investigated students attitudes towards choosing ICT Science course in relation to gender. The study adopted an observational, cross-sectional exploration design with both quantitative and qualitative methods of data collection. A structured questionnaire and an interview guide were employed to gather information from the respondents. Data was analyzed using frequencies, and tables. Study findings showed that there was a positive correlation between attitudes of students towards choosing ICT science course relating it to gender. The study recommended that there is need to advertise and give scholarships to young females to specifically pursue ICT science courses. There is need to encourage girl child education through the practice of positive discrimination and affirmative action in society. The society should be sensitized on the importance of a girl child so that elimination of gender stereotyping becomes easy. The study also suggests encouraging female candidates to apply for ICT courses and addressing gender-imbalance through student development programs. Universities should organize workshops or visit secondary schools and complain for a girls to take up ICT courses and also tell them that it is possible for them to do the course and should be told that ICT is not only meant for males only, everyone can do it irrespective of sex and gender.

Keywords:Gender, computer science, Information technology, Attitudes, Universities, Western Uganda

INTRODUCTION

Gender differences among ICT students emanates from primary and secondary where students show their interests in the subjects taught to them by either selecting science subjects or arts subjects. In most schools girls choose arts and boys select science subjects [1]. This has its roots from our culture and tradition which is full of gender stereotypes which looks mostly at a woman doing light work as compared to a man's roles and responsibilities (reproductive and productive gender roles, respectively). These stereotypes become a behavior or a habit in our societies where we live [1].

In Nigeria, there are still gender differences in science subjects. Girls and boys are not at the same level in enrolment, performance and selection of the science subjects. Girls are still under-represented in science subjects than boys [2].

Male and female students are qualitatively different in educational situation, especially in science and mathematics field [3]. School environment and science learning environment such as team project, class discussions, laboratory experiment and computer usage have a significant impact on learning outcomes

such as understanding the learning subjects, interest of discipline learning, independent learning, individual initiative and curiosity in order to reveal gender difference in students' attitude toward science [4].

METHODOLOGY

The study adopted non-experimental research design while using both Questionnaires and interview guide as research tools to collect data from the field. The study population covered all students of Bachelor of Computer Science, Bachelor of Information Technology and Diploma in Computer science totaling to 80 people. The selected area of study was Mountains of the Moon University of Fort Portal Municipality Kabarole District in Western Uganda. The sample size was chosen using the table of Morgan & Krejcie and it was 66 participants whose findings were generalisable to the target population [5].

Close ended questionnaires were used to collect information (quantitative data) for the research study because they gather information within a short period of time (5). At the same time, interview schedules were also employed to collect information in form of words (qualitative data) for the research study

because interviews can also collect data from facial expressions of participants [6].

Stratified random sampling was used to gather information from various categories of the respondents. This was to make sure that no category was left out (6). Purposive sampling was also utilized in order to garner vital data from the focal persons

The reliability of the close ended questionnaire was reached at by cronbach alpha coefficient formula, and for interviews was through carrying out persistent observations on the participants.

While the validity of the close ended questionnaire was arrived at using Content Validity Index and the validity of the interviews was assured by less talking and much listening (5).

Data was analyzed using frequencies, percentages and bar graphs for quantitative data, while for qualitative data, it was analyzed employing categorization of data into themes and sub-themes along a story manner structure (5).

DISCUSSION OF RESULTS RESULTS

Demographic characteristics

This describes the age brackets of respondents and course levels of participants that have contributed enormously to the value of the study.

Number of Students per course

The table below shows the number of students in every course. Bachelor of computer science has 10 males and zero females making it a total of 10 students, Bachelor of Information Technology has 31 males and 12 females totaling to 43 students, Diploma in Computer Science has 20 males and 7 females making a total of 27 students. All the three courses have 61 males and 19 females. This implies that out of 80 students of all the three courses only 19 are females. This shows a very strong gender difference in enrolment and in course selection. The study revealed that on general average males (61) dominated females counterparts (19). This implied that women need to be encouraged to select science courses and to avoid bias on science course and to give them career guidance.

Table-1: Number of Students per course

| | Male | Female | Total |
|----------------------------------|------|--------|-------|
| Bachelor in computer science | 10 | 0 | 10 |
| Degree of Information Technology | 31 | 12 | 43 |
| Diploma in computer science | 20 | 7 | 27 |
| Total | 61 | 19 | 80 |

Source: Primary data

Age brackets of the respondents

The study revealed that 33 of the students taking IT course were aged between 18-20 years, 29 of the respondents were aged between 21 - 35 years, while 4 of the respondents were aged between 26 – 30 years. This meant that most of the respondents were not too old; having a creative mind that may be good for the

future and career development. This implied that most of the Universities in Western Uganda are dominated by those within the age of 25 and 30 years indicating that it is still a young generation able to contribute to the growth and development of their career and country. All these categories of the population were consulted for a credible research study. Refer to the table-1 below:

Table-2: The Age of respondents

| | Particulars | | Total |
|-------------|-----------------|--------|-------|
| | Male | Female | |
| 18-20 | 20 | 13 | 33 |
| 21-25 | 23 | 6 | 29 |
| 26-30 | 4 | 0 | 4 |
| Above 30 | 0 | 0 | 0 |
| Total | 47 | 19 | 66 |
| Grand total | 66 participants | | |

Source: Primary data

Did you get carrier guidance at post primary / secondary level?

According to the table below, 59 of the respondents said that they did not have career guidance at post primary or secondary level. 7 of the respondents

said they received career guidance. This implies that majority of the students enroll for courses they are not sure of where they will take them and also some fear to take science courses they are not sure of with a conclusion that they are hard courses.

Table 3: Did you get carrier guidance at post primary / secondary level?

| | | Male | Female | Total |
|--|-----|------|--------|-------|
| Career guidance at post primary/ secondary level | Yes | 5 | 2 | 7 |
| | No | 42 | 17 | 59 |
| Total | | 47 | 19 | 66 |

Source: primary data

Results from Interviews

One of the respondents from the University said that

One of the problems is that right from our homes and from our primary schools we do not get the required career guidance which would help us to define our future objectives and goals. We are just repaired to pass exams and continue to another level without being sure of where we are heading why and for what.

This suggests that, parents and teachers do not give it enough time to orient children about the subjects they should take and they are not very observant on the

needs of the children which would help them to follow up what they need.

Do you think there are gender differences among students taking ICT courses?

From the table below, 38 of the respondents strongly agree that there are gender differences among students taking ICT courses, 19 of the respondents agree that there is a gender differences in ICT courses, 6 strongly disagree and 3 are not sure about gender differences in ICT. This implies that students are aware of the gender differences in their courses.

Table-4: Do you think there are gender differences among students taking ICT courses?

| Serial | | Male | Female | Total |
|--------|-------------------|------|--------|-------|
| 1 | Agree | 15 | 4 | 19 |
| 2 | Strongly agree | 30 | 8 | 38 |
| 3 | Strongly disagree | 1 | 5 | 6 |
| 4 | Not sure | 1 | 2 | 3 |
| 5 | Total | 47 | 19 | 66 |

Source: primary data

Results from Interviews

One of the male respondents from bachelor of computer science stated that

It is surprising that in our class females are not represented, there is no any female taking bachelor of computer science; most of the ladies have a poor attitude towards taking this course. Most think that it is a course for males because it involves technical work, repair and maintenance, programming among others. This is a serious stereotype which stems right from our culture and tradition that we do not need to continue believing in this contemporary world. Both students especially female need clear career guidance and orientation of IT related courses before selecting any course.

This implies that gender differences still exist right from the society and homesteads where females they are living. Females have a lot of inferiority complex and stereotypes but also lack of encouragement and guidance on the clear career paths they are supposed to take.

Most students believe that ICT and computer science courses are designed for men

From the table below, 52 of the respondents strongly disagree that ICT courses are not designed for men only, 9 of the respondents strongly agree that they were designed for men while 5 of the respondents also agree that they were designed for men. Basing on 52 respondents, the course is not only designed for men except females don't opt for it possibly because they think it's a hard course for men, and may be they don't take science subjects at A level which can enable them to get the entry requirements for the course.

Table-5: Most students believe that ICT and computer science courses are designed for men

| Serial | | Male | Female | Total |
|--------|-------------------|------|--------|-------|
| 1 | Agree | 3 | 2 | 5 |
| 2 | Strongly agree | 4 | 5 | 9 |
| 3 | Strongly disagree | 40 | 12 | 52 |
| 4 | Not sure | 0 | 0 | 0 |
| 5 | Total | 47 | 19 | 66 |

Source: primary data

Results from Interviews

One of the female respondents stated that;
Most of the IT courses are done by males than females the fact that most females have fear of the science and technology courses and opt for arts courses, but this does not mean that the courses are specifically designed for only the men. IT courses can be done by both genders. However, Gender differences in IT courses is frequently linked to traditions and stereotypes, whilst in some cases this may reflect personal choices, traditions and stereotypes may influence, for example, the choice of educational paths and, consequently, professional careers that girls and women make. In most cases females are the minority in fields like mathematics, computing and engineering.

This suggested that, generally, females perceive themselves to be less power-oriented than men and have more negative attitudes toward pursuing science courses, they are less likely to pursue IT

courses. Some women and girls are more bothered by anything they think to be hard for them and they are less motivated to dominate men, and they are less likely to take actions to attain challenging opportunities in life, however society and tradition makes there thinking rigid

Why do you think there is low female student numbers doing IT courses?

From the table below, 33 of the respondents think that science based entry requirements is a reason why the IT courses have fewer females than male's students, 21 of the respondents thin that hard curriculum is the reason why IT courses have low numbers of females. 10 of the respondents think that lack of career guidance at the highest level can lead to low enrolment of the females in the course. This implies that most of the females at A level that don't offer science courses making it difficult for them to do them at bachelors level or it means that they do the requires courses at A level but do not pass them to allow them pursue IT curses at University.

Table-6: Why do you think there is low female student numbers doing IT courses?

| | Male | Female | Total |
|--|------|--------|-------|
| Hard Curriculum | 15 | 6 | 21 |
| Science based entry requirements | 27 | 6 | 33 |
| Lack of carrier guidance at high level | 5 | 5 | 10 |
| ICT Science courses are meant for men only | 0 | 2 | 2 |
| Not sure | 0 | 0 | 0 |
| Total | 47 | 19 | 66 |

Source: Primary data

Results from Interviews

One of the female respondents stated that;
Most of the female students think that all science based courses are very hard and are meant for males and this affects their performance leading to poor entry requirements by the Universities. However, they develop this fear right from their primary to University level and this is mostly attributed to stereotypes, inferiority complex and lack of clear information about the courses.

This suggested that, most of the female students have bias and rigid thinking towards science based courses but also lack clear career guidance and enough support to these courses.

CONCLUSION

Study findings indicate the highest level of gender differences in IT course selection and in enrolment. The study findings show that females are the most underrepresented in both of the IT courses hence gender imbalance in IT courses. Lack of career guidance, fear of Science courses, lack of entry requirements, stereotyping, traditional beliefs and

inferiority complex were the leading factors contributing to low female enrollment in the IT science courses. The study suggested remedies like. The study also suggests encouraging female candidates to apply for ICT courses and addressing gender-imbalance through student development programs. Universities should organize workshops or visit secondary schools and complain for a girls to take up ICT courses and also tell them that it is possible for them to do the course and should be told that ICT is not only meant for males only, everyone can do it irrespective of sex and gender.

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